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# DEVIL'S GARDEN EXTERMINATION PROJECT

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## Modoc National Forest, California

## Introduction:

This project has been carried on since 1928 to study, (1) the possibility of complete extermination of the western pine beetle (Dendroctonus brevicomis Lec.) on an isolated area by control methods now in use, (2) the flight habits of the western pine beetle, and (3) the effects of the isolation upon the infestation.

The Timbered Mountain area of the Modoc National Forest was selected for the study due to its apparent isolation from surrounding stands of ponderosa pine. Brief descriptions of the area and its isolation have been given in previous reports (1, 2, 3).

A number of cruises of the area have been made in connection with the project, as follows:

| | |
|---|---|
| 1928 | September |
| 1929 | April, June, August and October |
| 1930 | May and August |
| 1931 | May |
| 1932 | April |
| 1933 | July |

Control operations have been carried on in conjunction with all the cruises except the first and last. The control method used in the study has been the one most commonly in use throughout the ponderosa pine belt, i.e., peeling and burning.

## 1932 Infestation:

The cruise to determine the 1932 losses was made in connection with the ECW program in July, 1933. No control program was planned for the 1932-overwintering brood since it was wished to ascertain the course of the infestation without control. The cruise showed a 1932 loss of 53 trees with a volume of 58,000 board feet, a decrease of only 0.4 percent over the 1931 losses. The annual losses from the beginning of the project are shown on the following page.

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| Year | # Trees | Volume |
|---|---|---|
| 1927 | 65 | 77,810 |
| 1928* | 60 | 64,120 |
| 1929* | 38 | 46,480 |
| 1930* | 57 | 49,990 |
| 1931* | 75 | 83,000 |
| 1932 | 53 | 58,010 |
| Total: | 348 | 379,410 |

* control program carried on

The absence of control for the 1932 over-wintering brood has made it impossible to determine the composition of the infestation by the bark area method as has been done in previous years. The composition of the 1932 infestation based upon basal examination alone shows an apparently slight decrease in the relative importance of the flathead beetles and a resumption of the western pine beetle to primary importance. However, from previous experience it has been shown that the composition of the infestation based upon basal examination is misleading, particularly when compared to an analysis made from infested bark surface areas. The latter method is considered to be more indicative of the true composition. The following table illustrates the composition of the 1931 and 1932 infestations based upon basal examination alone.

| | 1931 | | 1932 | |
|---|---|---|---|---|
| Insect spp. | # Trees | Volume | # Trees | Volume |
| Dendroctonus brevicomis | 46 | 60,550 | 32 | 40,320 |
| Dendroctonus monticolae | | | 1 | 270 |
| Melanophila species | 12 | 11,160 | 8 | 6,230 |
| Mixed species | 7 | 7,680 | 12 | 11,190 |
| Unknown | 8 | 2.610 | | |

Discussion:

The decrease in the 1932 infestation is not significant though it follows a very efficient control operation. From this it would appear that the pine beetles may be entering the extermination area from outside sources.

This is further shown by the fact that the infestation has centered in the northern half of the commercial pine type nearest to the outside bodies of ponderosa pine timber. The distance between these two pine stands is well within the flight possibilities of the western pine beetle.

It is hoped to continue the project without control to determine what effects, if any, the past control operations have had upon the area.

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